

Abstract

A MFI-structured molecular sieve containing phosphorus and metal components has a formula expressed in anhydrous form and on the basis of oxide weight, as follows: $(0\sim0.3) \text{Na}_2\text{O} (0.5\sim5.5) \text{Al}_2\text{O}_3 (1.3\sim10) \text{P}_2\text{O}_5 (0.7\sim15) \text{M1}_x\text{O}_y$
5 $(0.01\sim5) \text{M2}_m\text{O}_n (70\sim97) \text{SiO}_2$, wherein M1 is one of transition metals selected from the group consisting of Fe, Co and Ni, and M2 is any one of metals selected from the group consisting of Zn, Mn, Ga and Sn. Preparation processes and uses of the instant molecular sieve are also provided. The molecular sieve has an
10 excellent performance for increasing the yield of lower olefins and increasing the aromatics content in gasoline, and can be used as a shape-selective active component for the catalytic cracking catalyst of petroleum hydrocarbons or its additives.